

An introduction to peer review

What is Peer Review?

A great many processes go by the name of peer review, with no real operational definition. It is, however, generally understood to be the review of a scientific manuscript by scientists not involved in the study. These are selected by the editing staff of the journal based on the scientists' knowledge of the domain, research methodology and statistics, and willingness to contribute to the scientific process.

It has been shown that peer review delays the publication process, increases the costs, and may possibly be biased and open to abuse. It is very poor at detecting errors and is almost useless at detecting fraud. However, it still forms the mainstay of the scientific process.^[1] A number of modifications of the peer review process have been and are being tried, including but not limited to reviewer education, acknowledgment, monetary compensation (possibly in the form of waiving of publication fees or access to full-text articles), anonymous reviewing, signed reviewing, and open pre- and post-publication reviewing.

Who are Peer Reviewers?

Peer reviewers are fellow scientists and colleagues of the authors. They need to be familiar with the domain of the manuscript being reviewed but do not need to be authorities on the subject. Some reviewers are selected for specific expertise in a methodology or tool used. Being invited to review a manuscript is an honor. According to the Reviewers' Information Pack of Elsevier, by accepting to review manuscripts, you ensure the continued rigorous standards of the scientific process, uphold the integrity of the journal you are reviewing for, fulfill a sense of scientific obligation, establish relationships with reputable colleagues, reciprocate professional courtesy, establish your expertise in a particular area, stay current in the discipline, and facilitate advancement of your career.

Most scientists learn the art of reviewing on the job. Formal training is rare. This is one of the reasons for the documented

inconsistencies in the review process.^[2] The process becomes more consistent and enjoyable if a systematic method is adopted.

General Guidelines

Please adhere to the time limits set by the editor. If you are busy professionally or otherwise and cannot devote time for a review, decline to review the manuscript in the first instance. If you are yourself working in the same niche and thus have a conflict of interest, please let the editor know as soon as possible. The editor may still decide to let you review the manuscript if there are only a few people qualified in the topic.

Remember to be courteous. Your comments should be constructive. Marginal notes such as "so what?" and "what does this even mean?" detract from the quality of the review. Even your valid points may cause hurt and provoke resentment in such a context. The comments should include enough detail that the authors understand your point. Even if the manuscript in question is not accepted for publication, your comments should help to improve the quality of the authors' future research and writing. They should focus on how the argument is supported, not on whether you agree with it or not. Remember, the author whose manuscript you are reviewing today, may well be reviewing your manuscript tomorrow. Follow the golden rule: Do unto others as you would be done unto.

Single line reviews such as "you can publish this" do not contribute to the scientific evaluation of the manuscript. Remember, you are advising the editors. They will decide what to do with the article based on your and other reviewers' inputs as well as a number of other concerns. Furthermore, you should not be offended if your advice is not followed by the editor.

Maintain the confidentiality of the process. The manuscripts you receive are not for general circulation or gossip in the coffee room. Neither are they to be used for your own research projects. Unfortunately, this has occurred in the past. Once you finish the review, make sure that the manuscript and any accompanying material are deleted from your computer.

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If you make inline corrections in the manuscript, especially when using “track changes” feature, the word processor inserts your initials or name in the document leading to unblinding of the anonymous review process. Even a separate word processor document carries the same risk. You should disable this feature in your word processor. A separate text file prepared in a simple text editor is probably a better bet.

The main points on which you should comment are well listed by Benos *et al.*^[3]

1. Importance of the research question.
2. Originality of the work.
3. Delineation of strengths and weaknesses of the methodology/experimental/statistical approach/interpretation of results.
4. Writing style and figure/table presentation.
5. Ethical concerns.

Importance of the Research Question

Is the question addressed by the manuscript important enough? Does it address a question that needs to be answered? Remember that the potential audience for the article is not restricted to anesthesiologists. It may include physicians from other specialties, hospital administrators, policy makers, and patients. The question is important, not the answer. If the question is important, methodology correct, and the conclusion valid, it does not matter whether the answer is “significant” or “not significant.” By not publishing the so-called “negative” studies, scientific journals, and their editors have contributed to publication bias and thus to the unnecessary persistence of research into unprofitable avenues.

Originality of the Work

Is the study original? As someone familiar with the domain, you can probably decide this from your own knowledge. In specific cases, you may need to search the literature. This can be done directly from the JOACP reviewer interface. Unfortunately many studies are “me too” studies with hardly anything to distinguish them from other studies in the literature. If the only unique feature of the study is that it is the first one in Indians or in patients undergoing urological procedures or something similar, the authors should provide reasons for thinking that the result would be different in that subpopulation. If you think the research is unoriginal, please give references to previous work.

This is not to decry replication studies. They are needed to reduce the high incidence of false discovery rates in the

biomedical literature. However, such studies should be done only where the question is important and the findings unique. There should be a true duplication of methodology, and the manuscript should clearly say that it is a replication.

Delineation of Strengths and Weaknesses

It is important to mention the strengths as well as the weaknesses of the study as part of the review. Not all the reviewers are proficient in research methodology or statistics. However, all scientific authors and reviewers need to understand the basics of how to frame a research question. They should know the appropriate study designs and statistical tests for the question studied and the outcomes measured. They should be able to interpret the results correctly. Though old, a series of ten articles published in 1997 by Greenhalgh in the BMJ are essential reading for all peer reviewers. You should at least be familiar with the articles dealing with study designs,^[4] diagnostic tests,^[5] and the two articles that deal with statistical analysis for the nonstatistician.^[6,7] If you are good at research methodology and statistical analysis, you may want to duplicate some of the analyses the authors have done. In specific cases, you may even ask for the raw data to be provided.

The abstract should include the substantive portion of the results. Please see whether the data and conclusions given in the abstract and the text of the manuscript match. Read the discussion and conclusions carefully. Appropriate comparisons with the literature are warranted. If the authors cite only articles which favor their conclusions, draw attention to it. If there are other important studies dealing with the subject that the authors don't reference, please provide references. The limitations of the study should be brought out clearly in the discussion. Many authors tend to conclude far more than their data warrant. The conclusions should be limited to the context of the study. Any generalizations should be done carefully keeping external validity in mind.

Writing Style and Figure/Table Presentation

Please read the manuscript for clarity of thought, organization of the content and logical structure. Most of our authors are Indian. In addition, JOACP receives many submissions from African and the Middle Eastern countries among others. What is common to these authors is the fact that English is not their primary language of communication. This leads to nonstandard idioms and turns of phrase, in addition to many orthographic and grammatical errors. It is not necessary for you to catalog all the errors. It is enough to mention that they exist. It is the responsibility of the editorial office to deal

with these. The manuscripts are usually sent to the reviewers after some corrective measures have been taken. However, in particular cases where these errors impede you from reading the article for the scientific content you may return it for language revision.

Look for a balance between the tables and figures. Tables provide the data of the study while the figures illustrate the story. Most studies do not warrant more than a single digit precision in the numbers provided in the tables. Consider whether all the tables are necessary. Some small tables may be incorporated in the text. Others may be combined. Figures should be appropriate to the data being presented. Figures which do not show any major finding such as a trend or difference between two groups should be omitted. Both figures and tables should be appropriately labeled and titled to be understood on their own. In particular, if a reader just reads a table or a figure along with its legend without reading the article, she should be able to understand what data are presented and the conclusions to be drawn from it.

Ethical Concerns

Despite the approval of an Ethics Committee, please consider whether there are any ethical concerns with the way the subjects are treated in the study. The concerns may include inappropriate use of placebos, lack of or inadequate consent process, an inappropriate population not subject to the problem being studied, etc. Please check if the authors have acknowledged all sources of funding and any conflict of interest. If there is a suspicion of research misconduct such as fraudulent data, bring it to the notice of the editor privately.

Recommendations

At the end of the process, you should provide a recommendation for the editors indicating whether the manuscript should be rejected, revised or accepted with specific grounds for

each recommendation. In addition, you may suggest an accompanying commentary/editorial be commissioned.

Conclusion

It is not possible to deal comprehensively with the review process for all types of manuscripts in one short article. However, acquiring some skills in critical reading, basic research methodology and statistics, and following a systematic way of reviewing a manuscript while trying to answer the key questions listed here, may help make the reviewing process consistent, helpful to the authors and the editors, and enjoyable to yourself.

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